

BUTTERFLY MONITORING REPORT
November 2000
Cuyahoga Valley National Park

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History of Butterfly Collecting in Ohio

The study of Ohio butterflies and skippers (Lepidoptera) began as early as 1837. By 1897, Edward W. Claypole published a list of 48 species of butterflies for Summit County. John C. Pallister, an entomologist with the Cleveland Museum of Natural History, collected Lepidoptera in northeastern Ohio from 1924-1931. Since the 1960's, the understanding of butterfly fauna increased at a dramatic pace. In 1979 the Ohio Lepidopterists was founded to promote interest in and to provide information about butterflies, skippers, and moths of Ohio and neighboring states. In 1982, the first updated State list (since 1899) was provided. By 1986, the Ohio Lepidopterist Society and the Ohio Department of Natural Resources, Division of Wildlife, initiated the Ohio Survey of Lepidoptera. This survey documented the species of Lepidoptera present in Ohio, their distributions, and identified species endangered or threatened (Iftner, et.al, 1992).

Butterflies are important pollinators and are also significant in nutrient cycling, both as consumers and as prey for other species. Many species are restricted to unique ecological conditions, making them valuable indicators of ecosystem quality and change.

Of the approximately 700 American butterfly species, 144 have been reported in Ohio. Some have appeared in all 88 counties while others are very rare. Most of what is known about the butterflies of Ohio is based on museum specimens and anecdotal information from experienced lepidopterists.

Some species of butterflies and moths are in danger of disappearing from Ohio. In 1987, four butterflies were reported as endangered in Ohio (Persius Dusky Wing, Frosted Elfin, Karner Blue, Swamp Metalmark), one species as threatened (Silver-bordered Fritillary), and four of special concern (Grizzled Skipper, Olympia Marblewing, Edward's Hairstreak, Regal Fritillary; Rzeszutarski, 1999). The Ohio butterflies most in danger of extirpation are those dependent on larval food plants that grow in wetlands, most of which have been drained or developed (Platt, 1998).

Proposed reasons for declines in butterfly abundance in Ohio include habitat changes and pesticide use. Long term data that track regional and local trends in abundance are essential in revealing population declines before their final stages. Declines are hard to detect when they occur slowly and/or lag years behind their causes (Rzeszutarski, 1999).

In 1996 Cuyahoga Valley National Park (CVNP) was invited to participate in a long term butterfly monitoring program initiated by the Cleveland Museum of Natural History. The program was expanded statewide in 1998 by the Ohio Lepidopterists and now includes 30 sites. This report summarizes the 1996-2000 monitoring seasons in CVNP.

Methodology

The method used for monitoring butterflies was originally developed at Monks Wood Experimental Station in Great Britain, and details of the methodology have been published (Pollard, 1991; Pollard and Yates, 1993).

In 1996, two transects in CVNP were selected along a fixed route. Transects were circular routes, less than 1 ½ miles in length and marked with stakes. Transects were selected to travel through as many different habitats as possible. Transects were walked at least once a week at the height of the

season (May through September). Transects were divided into ten sections. Each section signified a discrete habitat type or subdivision of the same habitat only managed differently. Once the sections were defined, they will not be changed from year to year. Notes, photographs and video describing the different habitat types in each section were recorded. The dominant plant species in each section and nectar sources were also recorded.

Transects were walked at an even pace and the butterflies which were within 15 feet of the observer were recorded. Observers imagined themselves in a box defined by 15 feet (7.5 feet to either side), counting only those butterflies which pass through the box as they walk the transect. Individuals that were seen previously and flew back into the survey were recorded only once. Butterflies were observed through binoculars, or examined more closely with the use of a net to be sure of identification. Butterflies that were not identified were photographed and/or videotaped for later identification and then released. Occasionally voucher specimens were collected for identification by museum experts.

The monitoring season began on April 1st and ended on September 30th. However, weather warmer than 65° F prior to April 1st and after September 30th extended the survey season. Monitoring occurred between 11:00 am and 5:00 p.m. Temperatures and percent cloudiness were recorded. Transects were not walked if temperatures were less than 60° F. Between 60-65° F, transects were walked provided it was sunny for at least 75% of the sections. Between 65-70° F, transects were walked provided it was sunny for at least 50% of the sections. Above 70° F transects were walked in any conditions except rain. Wind speed and direction were estimated using the Beaufort wind scale. Butterfly transects were not walked when wind speed exceeded 19-24 mph.

Species were recorded per each section along with any larvae observed. Energy sources, both nectar and other sources such as sap, fruit and feces were also noted.

Transect Locations

In 1996 two transect locations in CVNP were selected for the long term butterfly monitoring program. These transects were established at Terra Vista on Tinkers Creek Road in the Village of Valley View (Cuyahoga County) and the Armington Pond area on Quick Road in Boston Township (Summit County). These sites were selected in order to place transects in the northern and southern ends of the park, and also to cover two counties. After two monitoring seasons the Armington transect was discontinued due to lack of personnel and the potential of future agricultural development of the transect area.

Terra Vista is diverse in butterflies and habitats. The site is a former sand and gravel removal operation that has been restored naturally. The area is scrub, old field in various stages of succession. The area is transected by a mowed utility right-of way and intermittent wetland potholes dot the landscape. Willows and autumn olives are the dominant tree species. Old fields form some of the most important butterfly habitats in Ohio because they have been allowed through succession to develop into diverse assemblages of herbaceous plants. Other habitats such as utility line rights-of way are maintained in early successional states by periodic disturbance (mowing). These habitats often develop a very diverse herbaceous flora which supports some of Ohio's rarest butterflies (Iftner, et.al 1992). Therefore, the transect at Terra Vista will remain a long term monitoring site. The data described in this report will be specific to Terra Vista. A plant list for Terra Vista is included in this report as Appendix A.

Discussion

The Cleveland Museum of Natural History will complete analysis of regional data as a separate report. Long term data will provide information on changes in butterfly abundance, colonization and extinction as habitats change, expansion and reductions in ranges, migrations, immigrations of non-native species, flight periods, seasonal variations and overall health of butterflies in Ohio (Rzeszutarski, 1999). The long term goal is to make all of the data available statewide via an internet web page.

During the first year of the survey (1996), 26 species of butterflies and skippers were recorded at Terra Vista (34 species at Armington Pond) from April until October 1st. After 5 years of surveying a total of 56 species have been recorded. The following table lists the total number of butterflies counted by species each year at Terra Vista.

Terra Vista Long Term Monitoring Site		1996	1997	1998	1999	2000
Acadian hairstreak	<i>Satyrrium acidicum</i>	1	0	5	32	94
Albino sulphur	<i>Colias sp.</i>	0	0	0	0	34
American Copper	<i>Lycaena phlaeas americana</i>	0	11	67	13	26
Aphrodite fritillary	<i>Speyeria aphrodite</i>	0	10	0	0	0
Baltimore	<i>Euphydryas phaeton phaeton</i>	0	0	0	1	2
Banded hairstreak	<i>Satyrrium calanus falacer</i>	0	0	1	0	1
Black dash skipper	<i>Euphyes conspicuus</i>	0	0	2	0	0
Black Swallowtail	<i>Papilio polyxenes</i>	18	6	14	64	55
Buckeye	<i>Junonia caenia</i>	0	0	2	9	3
Cabbage white	<i>Pieris rapae</i>	108	443	802	1349	291
Clouded sulphur	<i>Colias philodice</i>	129	5	14	102	50
Cloudless sulphur	<i>Phoebis sennae eubule</i>	0	1	0	0	0
Comma	<i>Polygonia comma</i>	0	0	4	2	5
Common wood nymph	<i>Cercyonis pegala F. alope</i>	64	112	133	60	44
Coral hairstreak	<i>Harknclenus titus</i>	1	4	0	0	1
Dun skipper	<i>Euphyes vestris metacomet</i>	0	0	0	1	0
Eastern tailed blue	<i>Everes comyntas</i>	30	58	246	209	285
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	15	26	130	92	37
Edward's hairstreak	<i>Satyrrium edwardsii</i>	0	0	1	2	0
European Skipper	<i>Thmelicus lineola</i>	225	537	424	98	14
Fiery skipper	<i>Hylephila phyleus</i>	0	0	2	2	5
Great Spangled Fritillary	<i>Speyeria cybele</i>	48	72	53	167	184
Hoary edged skipper	<i>Achalarus lyciades</i>	6	3	1	2	2
Hobomok skipper	<i>Poanes hobomok hobomok</i>	24	134	7	10	13
Horace's duskywing	<i>Erynnis horatius</i>	4	0	6	11	5
Indian skipper	<i>Hesperia sassacus sassacus</i>	0	0	1	0	0
Juvenal's duskywing	<i>Erynnis juvenalis juvenalis</i>	0	0	0	10	9
Least skipper	<i>Ancyloxpha numitor</i>	0	26	1	31	3
Leonard's skipper	<i>Hesperia leonardus leonardus</i>	0	0	1	1	1
Little Glassy Wing	<i>Pompilus vetna</i>	0	0	0	0	11
Little Wood Satyr	<i>Megisto cymela</i>	185	292	337	583	572
Meadow fritillary	<i>Clossiana bellona</i>	0	7	0	3	1
Monarch	<i>Danaus plexippus</i>	32	240	73	94	22
		1996	1997	1998	1999	2000
Mourning cloak	<i>Nymphalis antiopa antiopa</i>	2	10	8	10	11

Northern broken dash	<i>Wallengrenia egeremet</i>	0	1	2	0	9
Northern cloudywing	<i>Thorybes pylades</i>	8	0	3	10	7
Northern pearly eye	<i>Enodia anhedon</i>	0	8	0	0	1
Orange sulphur (alfalfa)	<i>Colias eurytheme</i>	5	446	137	397	712
Painted lady	<i>Vanessa cardui</i>	0	4	1	0	3
Pearl Crescent	<i>Phyciodes tharos</i>	128	673	542	612	580
Peck's skipper	<i>Polites coras</i>	1	0	6	12	1
Question Mark	<i>Polygonia interrogationis</i>	3	0	0	1	8
Red Admiral	<i>Vanessa atalanta rubria</i>	0	1	2	11	14
Red Spotted Purple	<i>Limenitis arthemis astyanax</i>	13	112	28	11	23
Silver Spotted Skipper	<i>Epargyreus clarus clarus</i>	19	90	71	93	87
Silvery checkerspot	<i>Chlosyne nycteis</i>	0	0	21	3	9
Sleepy duskywing	<i>Erynnis brizo</i>	0	0	0	2	0
Southern cloudywing	<i>Thorybes bathyllus</i>	0	0	1	0	1
Spicebush swallowtail	<i>Papilio troilus</i>	0	5	10	22	4
Spring Azure	<i>Celastrina ladon complex</i>	3	5	10	69	11
Summer Azure	<i>Celastrina sp.</i>	0	0	0	5	23
Viceroy	<i>Limenitis archippus archippus</i>	33	123	92	83	97

The fifteen most commonly seen butterflies at Terra Vista based on five years of transect data are:

European Cabbage White
 Pearl Crescent
 Monarch
 Alfalfa (Orange Sulphur)
 Eastern Tiger Swallowtail
 Great Spangled Fritillary
 Common Wood Nymph
 Eastern Tailed Blue
 Clouded Sulphur
 Silver-spotted Skipper
 Hobomok Skipper
 Zabulon Skipper
 Little Wood Satyr
 Viceroy
 European Skipper

The phenology (flight periods) for some of the most common butterflies for the 2000 survey at Terra Vista is included as Appendix B.

Future Monitoring

The greatest threats to most butterfly populations are habitat destruction and environmental degradation. Extirpation of certain species of butterflies in Ohio probably resulted from the draining of wetlands for agricultural use. A newer threat to Ohio's butterfly diversity is the gypsy moth (*Lymantria dispar* (L.)). This forest defoliator can reach extremely high larval densities, and is capable of defoliating large tracts of forest. However the human response to the pest may cause ecological damage (Iftner, et.al, 1992). Pesticides used to control gypsy moths can affect butterflies with limited distributions and early spring larvae. Biological pesticides (*Bt* and *Gypchek*) were used in and around the park to suppress the outbreak of gypsy moth in May 2000 and are likely to be used again. If Terra Vista is managed for gypsy moths in future

years we may notice a decline in abundance and species diversity depending on the biological pesticide that is selected. Baseline data from Terra Vista may be useful to monitor any affects on non-targeted Lepidoptera species in treated areas in the future.

While differences in abundance are apparent from year to year, the diversity of species has not decreased. Many species fly for only 2-3 week periods each year and this may result in year to year differences in the timing of adult activity patterns. Butterfly activity is also dependent upon weather patterns. The arrival of warm weather has a major influence on the phase of adult flight period. Park staff and volunteers will continue to monitor butterflies as part of a long-term statewide effort. Long-term data (ten to twenty years) is necessary in order to begin to understand trends.

Thanks to the following volunteers for their years of dedication to this project: Cynthia Mazer, Linda Moranz, Pat Rydquist, Judy Biscan, Dorothy Hagerling, Margy Seibert, Martha McCombs, Wilbur McQueen and Reita Basterfield.

Appendix A.

Terra Vista Plant List

Common Name	Scientific Name
Agrimony	<i>Agrimony sp.</i>
Autumn olive	<i>Elaeagnus umbellata</i>
Bedstraw	<i>Galium mallugo</i>
Biennial gaura	<i>Gaura biennis</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black locust	<i>Robinia pseudoacacia</i>
Black medic	<i>Medicago lupulina</i>
Black Raspberry	<i>Rubus occidentalis</i>
Blue-eyed grass	<i>Sisyrinchium sp.</i>
Bull thistle	<i>Cirsium vulgare</i>
Canada thistle	<i>Cirsium arvense</i>
Chickweed	<i>Stellaria media</i>
Cinquefoil	<i>Potentilla simplex</i>
Colts foot	<i>Tussilago farfara</i>
Common Milkweed	<i>Asclepias syriaca</i>
Common Mullein	<i>Verbascum thapsus</i>
Common ragweed	<i>Ambrosia artemesifolia</i>
Common wood sorrel	<i>Oxalis stricta</i>
Coreopsis	<i>Coreopsis</i>
Cottonwood	<i>Populus deltoides</i>
Daisy Fleabane	<i>Erigeron strigosus</i>
Dames rocket	<i>Hesperis matronalis</i>
Dandelion	<i>Taraxacum officinale</i>
Deptford pink	<i>Dianthus armeria</i>
Dewberry	<i>Rubus hispidus</i>
Dogbane	<i>Apocynum cannabinum</i>
Early goldenrod	<i>Solidago juncea</i>
Evening primrose	<i>Oenothera biennis</i>
Field bindweed	<i>Convolvulus sipirum</i>
Field peppergrass	<i>Lepidium campestre</i>
Flat top aster	<i>Aster umbellatus</i>
Flax	<i>Linum sp.</i>
Flowering dogwood	<i>Cornus florida</i>
Forsythia	<i>Forsythia</i>
Garlic mustard	<i>Alliaria petiolata</i>
Goatsbeard	<i>Tragopogon pratensis</i>
Grapevine	<i>Vitis sp.</i>
Grass-leaved goldenrod	<i>Solidago sp.</i>
Gray goldenrod	<i>Solidago nemoralis</i>
Ground ivy	<i>Glechoma hederacea</i>
Hairy vetch	<i>Vicia villosa</i>
Hawkweed	<i>Hieracium sp.</i>
Hawthorn	<i>Cratageus</i>
Hedge parsley	<i>Torilis japonica</i>
Honeysuckle	<i>Lonicera fragaria</i>
Ironweed	<i>Veronia gigantea</i>
Joe-pye weed	<i>Eupatorium fistulosum</i>
Lobelia	<i>Lobelia sp.</i>
Moth mullein	<i>Verbascum blattaria</i>
Mouse-ear chickweed	<i>Cerastium vulgatum</i>
Multiflora rose	<i>Rosa multiflora</i>
New England aster	<i>Aster novae angliae</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>

Pennsylvania bittercrest	<i>Cardamine pensylvanica</i>
Purple dead nettle	<i>Lamium purpureum</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Queen Anne's Lace	<i>Daucus carota</i>
Ragweed	<i>Ambrosia artemisiifolia</i>
Red clover	<i>Trifolium pratense</i>
Rough avens	<i>Geum laciniatum</i>
Rough fruited cinquefoil	<i>Potentilla norvegica</i>
Slender vetch	<i>Vicia tetrasperma</i>
Spotted knapweed	<i>Centaurea maculosa</i>
St. John's wort	<i>Hypericum perforatum</i>
Swamp loosestrife	<i>Decodon verticillatus</i>
Swamp milkweed	<i>Asclepias incarnata</i>
Sweet everlasting	<i>Gnaphalium obtusifolium</i>
Tall boneset	<i>Eupatorium sp.</i>
Teasel	<i>Dispacus sylvestris</i>
Tick trefoil	<i>Desmodium lavigatum</i>
Toothwort	<i>Cardamine concatenata</i>
Veronica	<i>Veronica sp.</i>
Vinca	<i>Vinca sp.</i>
Violet	<i>Viola sp.</i>
Viper's bugloss	<i>Echium vulgare</i>
Virgin's bower	<i>Clematis virginiana</i>
White vervain	<i>Verbena urticifolia</i>
Wild black cherry	<i>Prunus serotina</i>
Wild strawberry	<i>Fragaria virginiana</i>
Yarrow	<i>Achillea sp.</i>
Yellow rocket	<i>Barbarea vulgaris</i>
Yellow sweet clover	<i>Melilotus alba</i>

Appendix B

1999 Phenology Most Common Butterflies at Terra Vista

<u>Week Number</u>	<u>Month</u>	<u>Days</u>
1	April	1-7
2	April	8-14
3	April	15-21
4	April	22-28
5	April	29-30
5	May	1-5
6	May	6-12
7	May	13-19
8	May	20-26
9	May	27-31
9	June	1-2
10	June	3-9
11	June	10-16
12	June	17-23
13	June	24-30
14	July	1-7
15	July	8-14
16	July	15-21
17	July	22-28
18	July	29-31
18	Aug	1-4
19	Aug	5-11
20	Aug	12-18
21	Aug	19-25
22	Aug	26-31
22	Sept	1
23	Sept	2-8
24	Sept	9-15
25	Sept	16-22
26	Sept	23-30

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OHIO BUTTERFLIES
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Flight Date	Found in CVNP	Common Name	Genus	Status	Habitat	Host plant
June-July	X	Acadian Hairstreak	<i>Satyrrium acadica acadica</i>	Res;R	wetlands/willows	black willow
April-Dec	X	Alfalfa Butterfly/Orange Sulph	<i>Colias eurytheme</i>	nRes;C	any open area	alfalfa
May-July Sept	X	American Copper	<i>Lycaena phlaeas americana</i>	REs;U	old fields	sheep sorrel
April, May, June, Aug, S	X	American Painted Lady	<i>Vanessa virginiensis</i>	Res;U	open areas	plantain-leaved everlasting
June-July	X	Aphrodite Fritillary	<i>Speyeria aphrodite aphrodite</i>	Res;R	open woodlands	violets
May		Appalachian Blue	<i>Celastrina neglecta-major</i>	REs;R	cool, moist ravines	black cohosh
June-July		Appalachian Eyed Brown	<i>Satyrodes appalachia leeuwi</i>	Res;R	shaded wetland	sedges;C. lacustris
June	X	Baltimore	<i>Euphydryas phaeton phaeton</i>	Res;R	fens,sedge meadow	turtlehead;beardtongue
June-July	X	Banded Hairstreak	<i>Satyrrium calanus falacer</i>	Res;U	oak-hickory	white oak
July	X	Black Dash	<i>Euphyes conspicua conspicua</i>	Res;U	bogs,fens, sedge me	Carex stricta
May, July, Aug	X	Black Swallowtail	<i>Papilio polyxenes asterius</i>	Res;C	old fields	carrot family
July		Broad-winged Skipper	<i>Poanes viator viator</i>	Res;U	sedge meadows	Carex lacustris
June-Sept		Bronze Copper	<i>Lycaena hyllus</i>	Res;U	moist habitats	great water dock
April-Nov	X	Buckeye	<i>Junonia coenia Hubner</i>	Imm;R	open areas;exposed	English plantain
May - Nov		Checkered Skipper	<i>Pyrgus communis</i>	Res;l	any open area	mallows
April-Oct		Checkered White	<i>Pontia protodice</i>	Imm;R	pepper grass	mustards
April-Dec	X	Clouded Sulphur/common su	<i>Colias philodice philodice</i>	Res;C	any open area	red clover, white clover
March-Oct	X	Comma	<i>Polygonia comma</i>	Res;U	deciduous woods	nettles;elm
May-July; Sept		Common Sooty Wing	<i>Pholisora catullus</i>	Res;C	pastures;	amaranth,lambs quarters
July	X	Common Wood Nymph	<i>Cercyonis pegala alope</i>	Res;U	open woodlands	grass;purpletop
July-August	X	Compton Tortoise Shell	<i>Nymphalis vau-album j-album</i>	Imm;R	decid/conif woods	willows, birches, aspen
June-July	X	Coral Hairstreak	<i>Harkenclenus titus titus</i>	Res;U	open fields	wild black cherry,choke che
May-Sept.		Cross Line Skipper	<i>Polites origenes origenes</i>	Res;U	open grassy areas	purple top, little bluestem
July-Oct		Dainty Sulphur	<i>Nathalis iole</i>	Imm;R	dry, open areas;RR	asters;sneezeweed
July		Delaware Skipper	<i>Atrytone logan logan</i>	Res;U	open grassy area	bluestem;switchgrass
July		Dion Skipper	<i>Euphyes dion</i>	Res;U	open wetlands	Carex lacustris
July		Duke's Skipper	<i>Euphyes dukesi</i>	Res;U	shaded swamps	Carex lacustris
May-Sept	X	Dun Skipper	<i>Euphyes vestris metacomet</i>	Res;C	open areas	Carex stricta

Park Butterfly Species List
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April, May, July		Early Hairstreak	<i>Erora laeta</i>	Res;R	beech forest	american beech
May-Oct		Eastern Snout Butterfly	<i>Libytheana bachmanii bachmanii</i>	Unc;U	mesic woodlands	hackberry
April-Oct	X	Eastern Tailed Blue	<i>Everes comyntas commyntas</i>	Res;C	open area near legu	legumes
July	X	Edward's Hairstreak	<i>Satyrrium edwardsii</i>	Res;R	oak savannas	black oak
May-Nov	X	European Cabbage White	<i>Pieris rapae</i>	nRes;C	any open area	wild mustards;garlic mustar
June-Sept	X	European Skipper	<i>Thymelicus lineola</i>	nRes;C	open moist area	timothy
July-Oct	X	Fiery Skipper	<i>Hylephila phyleus phyleus</i>	Imm;U	weedy lots	grasses
July-Aug		Giant Swallowtail	<i>Papilio cresphontes</i>	Res;U	open areas near Ru	Rue family
April-Oct		Gray Comma	<i>Polygonia progne progne</i>	Res;R	wet decid. woods	elms;gooseberries
May, July, Aug		Gray Hairstreak	<i>Strymon melinus humuli</i>	Res;U	woodland;open	garden pea;wild senna
June-July	X	Great Spangled Fritillary	<i>Speyeria cybele cybele</i>	REs;C	open woodlands	violets
April, May		Grizzled Skipper	<i>Pyrgus centaureae wyandot</i>	Res;R	mature oaks	dwarf cinquefoil
June-Aug		Hackberry Butterfly	<i>Asterocampa celtis celtis</i>	REs;U	hackberry trees	hackberry trees
April-Sept	X	Harvester	<i>Feniseca tarquinius tarquinius</i>	Res;U	shrub-lined creeks	predacious on woolly aphids
June-July		Hickory Hairstreak	<i>Satyrrium caryaevorum</i>	Res;R	hickory	black walnut;shagbark hicko
May, June, Aug	X	Hoary Edge	<i>Achalarus lyciades</i>	Res;U	powerlines	tick-trefoil
April, May	X	Horace's Dusky Wing	<i>Erynnis horatius</i>	Res;U	oaks	oaks
May-June	X	Indian Skipper	<i>Hesperia sassacus sassacus</i>	Res;U	dry grassy fields	red fescue;broom-sedge
April, May	X	Juvenal's Dusky Wing	<i>Erynnis juvenalis juvenalis</i>	Res;C	oak forests	white oak
May-Aug	X	Least Skipper	<i>Ancyloxypha numitor</i>	Res;C	moist, open meadow	grasses
Aug-Sept	X	Leonard's Skipper	<i>Hesperia leonardus leonardus</i>	Res;U	prairie openings	andropogon stands
June-July	X	Little Glassy Wing	<i>Pompeius verna</i>	Res;U	brushy fields	purple top
June-Oct		Little Sulphur	<i>Eurema lisa lisa</i>	Imm;R	old field;prairie	partridge pea
May-July	X	Little Wood Satyr	<i>Megisto cymela cymela</i>	Res;C	shaded habitats	Virginia wildrye
June		Long Dash	<i>Polites mystic mystic</i>	Res;U	wet, marshy area	sedges
May, June, July, Sept	X	Meadow Fritillary	<i>Boloria bellona bellona</i>	REs;C	open mesic	violets
All year	X	Milbert's Tortoise Shell	<i>Nymphalis milberti milberti</i>	Res;R	mesic woods	stinging nettles
July-Oct	X	Monarch	<i>Danaus Plexippus plexippus</i>	Imm;C	open habitat	milkweed
May-Aug		Mottled Dusky Wing	<i>Erynnis martialis</i>	Res;R	wooded margin	NJ tea
June-July	X	Mourning Cloak	<i>Nymphalis antiopa antiopa</i>	Res;U	deciduous woods	black willow;elm

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Common Name	Adult energy sources				
Acadian Hairstreak	milkweed, swamp milkweed, dogbanes, thistle				
Alfalfa Butterfly/Orange Sulphur	alfalfa, red clover, milkweed, self-heal, teasel				
American Copper	oxeye daisy, blazing star, dwarf cinquefoil, wild strawberry				
American Painted Lady	red clover, alfalfa, Canada thistle				
Aphrodite Fritillary	milkweed, butterfly-weed, Indian hemp				
Appalachian Blue	sweet cicely, blackberry, gray dogwood				
Appalachian Eyed Brown	tree sap; rotting fruit				
Baltimore	milkweed, butterfly weed, dogbane, black-eyed Susan				
Banded Hairstreak	milkweed, ironweed, sweet clover				
Black Dash	milkweed, swamp milkweed, bergamot, pickerel weed				
Black Swallowtail	alfalfa, red clover, milkweed, purple coneflower, teasel				
Broad-winged Skipper	milkweed, alfalfa, bergamot				
Bronze Copper	alfalfa, red clover, milkweed, thistles, knotweed				
Buckeye	red clover, alfalfa, wild carrot				
Checkered Skipper	alfalfa, clover, white aster				
Checkered White	red clover, alfalfa, ironweed				
Clouded Sulphur/common sulphur	alfalfa, red clover, white clover, milkweed, asters				
Comma	common boneset, blackberry				
Common Sooty Wing	white clover, red clover, alfalfa, fleabane				
Common Wood Nymph	red clover, wild carrot, teasel				
Compton Tortoise Shell	rotting fruit; damp soil; sap				
Coral Hairstreak	red clover, milkweed, yarrow, Indian hemp, butterfly-weed				
Cross Line Skipper	alfalfa, red clover, milkweed, dogbane				
Dainty Sulphur	red clover				
Delaware Skipper	alfalfa, red clover, milkweed				
Dion Skipper	milkweed, Canada Thistle, bull thistle, pickerelweed				
Duke's Skipper	alfalfa, red clover, milkweed, buttonbush				
Dun Skipper	red clover, white clover, milkweed, fleabane, teasel				
Early Hairstreak	spring beauty				
Eastern Snout Butterfly	milkweed, Indian hemp, wild carrot				
Eastern Tailed Blue	lupine, red clover, white clover, alfalfa, cinquefoil				
Edward's Hairstreak	milkweed, butterfly weed				
European Cabbage White	alfalfa, red clover, white clover, dame's rocket, loosestrife, milkweed, wing-stem				
European Skipper	alfalfa, red clover, crown vetch				
Fiery Skipper	red clover, alfalfa, white aster				
Giant Swallowtail	alfalfa, red clover, milkweed, teasel, dame's rocket				
Gray Comma	teasel.				
Gray Hairstreak	red clover, alfalfa, redbud, milkweed, coneflower				
Great Spangled Fritillary	milkweed, Indian himp, red clover, alfalfa				
Grizzled Skipper	dward cinquefoil, coltsfoot, wood vetch				

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Hackberry Butterfly	red clover, milkweed, tree sap, rotten fruit			
Harvester	golden ragwort			
Hickory Hairstreak	milkweed, Indian hemp, Canada thistle			
Hoary Edge	alfalfa, milkweed, multiflora rose, Joe-Pye			
Horace's Dusky Wing	milkweed, ironweed, blazing star			
Indian Skipper	orange hawkweed			
Juvenal's Dusky Wing	multiflora rose, russian olive, garlic mustard, violets			
Least Skipper	red clover, oxeye daisy, alfalfa, Canada Thistle			
Leonard's Skipper	blazing stars, wild bergamot, poke-weed, ironweed, thistles			
Little Glassy Wing	red clover, milkweed, thistle			
Little Sulphur	self-heal; red clover, blazing star			
Little Wood Satyr	tree sap; rotting fruit			
Long Dash	red clover, swamp milkweed, Canada Thistle			
Meadow Fritillary	garlic mustard, violets, alfalfa, red clover			
Milbert's Tortoise Shell	red clover, milkweed, crown-vetch			
Monarch	red clover, alfalfa, milkweed, butterfly weed			
Mottled Dusky Wing	blazing star			
Mourning Cloak	milkweed; tree sap; rot fruit			
Northern Broken Dash	red clover, alfalfa, white sweet clover, thistles			
Northern Cloudywing	red clover, milkweed bull thistle			
Northern Eyed Brown	wild bergamot			
Northern Golden Skipper	red clover, wild cransebill, oxeye daisy, iris			
Northern Pearly Eye	tree sap, rotten fruit			
Ocola Skipper	white aster			
Painted Lady	red clover, alfalfa, wild carrot, milkweed			
Pearl Crescent	alfalfa, red clover, white clover, black mustard, pepper grass			
Peck's Skipper	red clover, white clover, teasel, Canada Thistle			
Pipevine Swallowtail	alfalfa, red clover, milkweed, butterfly weed			
Question Mark	red clover, dogwood, milkweed, asters			
Red Admiral	alfalfa, red clover, crown vetch			
Regal Fritillary	milkweed, butterfly-weed, red clover, alfalfa, thistles			
Roadside Skipper	white clover, blackberries			
Sachem	alfalfa, red clover, wild bergamot			
Silver-spotted skipper	clover, ironweed, dames rocket thistle			
Silvery Blue	wood vetch, white clover, spring beauty			
Silvery Checkerspot	red clover, white clover, oxeye daisy			
Sleepy Orange	alfalfa, velvet leaf, asters, ironweed			
Southern Cloudywing	red clover, bull thistle			
Southern Golden Skipper	red clover, thin leaved sunflower, milkweed, thistle, dames rocket			
Spicebush Swallowtail	red clover, winter cress, milkweed, Joe-Pye weed, thistle			
Spring Azure	redbud, white clover, wild carrot, parsnip,			

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June-Aug	X	Northern Broken Dash	<i>Wallengrenia egeremet</i>	Res;U	old fields;roadside	panic grasses
May-July	X	Northern Cloudywing	<i>Thorybes pylades</i>	Res; U	forest margins	tick-trefoil
July		Northern Eyed Brown	<i>Satyrodes eurydice eurydice</i>	Res;U	wetlands	sedges;C.stricta
May-June	X	Northern Golden Skipper	<i>Poanes hobomok hobomok</i>	Res;U	forest margins	panic grasses
July-Aug	X	Northern Pearly Eye	<i>Enodia anthedon</i>	Res;U	deciduous woods ne	alta fescue grass
June-Oct		Ocola Skipper	<i>Panoquina ocola</i>	Imm;R	open aareas	rice
May-Oct	X	Painted Lady	<i>Vanessa cardui</i>	Imm;R	open habitat/nectar	Canada thistle
May, July, Aug	X	Pearl Crescent	<i>Phyciodes tharos tharos</i>	Res;C	open areas/nectar	asters
May-Sept	X	Peck's Skipper	<i>Polites coras</i>	Res;U	open grassy areas	rice cutgrass
May, July		Pipevine Swallowtail	<i>Battus philenor philenor</i>	Res;U	open woods	pipevines;Dutchmans pipe
May-Oct	X	Question Mark	<i>Polygonia interrogationis</i>	Res;U	deciduous woods	Siberian elm, slippery elm
May-July	X	Red Admiral	<i>Vanessa atalanta rubria</i>	Res;U	mesic forests	nettles
July		Regal Fritillary	<i>Speyeria idalia</i>	Res;R	wet fields	birdsfoot violet
April-Aug		Roadside Skipper	<i>Amblyscirtes vialis</i>	Res;C	open deciduous woc	grasses
July-Oct		Sachem	<i>Atalopedes campestris huron</i>	Imm;R	open areas	goose grass
May, June, Aug	X	Silver-spotted skipper	<i>Epargyreus clarus clarus</i>	Res;C	clover, alfalfa	locust;hogpeanut
April-May		Silvery Blue	<i>Glaucopsyche lygdamus lygdamus</i>	REs;R	near wood vetch	wood vetch
June, Aug	X	Silvery Checkerspot	<i>Chlosyne nycteis nycteis</i>	Res;U	open areas	wing-stem
May-Oct		Sleepy Orange	<i>Eurema nicippe</i>	Imm;R	old fields	wild senna
May-Sept		Southern Cloudywing	<i>Thorybes bathyllus</i>	Res; U	oak forests	legumes
May-June; Aug	X	Southern Golden Skipper	<i>Poanes zabulon</i>	Res;C	open forests	purple top grass
May, Aug	X	Spicebush Swallowtail	<i>Papilio troilus</i>	Res;U	deciduous forests	sassafras;spicebush
March-Sept	X	Spring Azure	<i>Celastrina ladon ladon</i>	Res;C	deciduous forests	flowering dogwood
July		Striped Hairstreak	<i>Satyrrium liparops strigosum</i>	REs;U	open forests	crabapple, choke cherry
June-Aug		Swarthy Skipper	<i>Nastra lherminier</i>	Res;U	disturbed fields	little bluestem
May-Aug		Tawny-edged Skipper	<i>Polites themistocles</i>	Res;U	open grassy areas	panic grasses
March-Sept	X	Tiger Swallowtail	<i>Papilio glaucus glaucus</i>	Res;C	deciduous forest	ash
June-July		Two-spotted Skipper	<i>Euphyes bimacula bimacula</i>	Res;R	sedge meadow;fen	Carex stricta
May-Nov		Variegated Fritillary	<i>Euptoieta claudia</i>	Imm;U	clover fields	field pansy;violets
June-Aug	X	Viceroy	<i>Limenitis archippus archippus</i>	Res;U	open area/willows	cottonwood

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April-May		West Virginia White	<i>Pieris virginiensis</i>	Res;R	deciduous woods	two-leaved toothwort
May-Aug	X	White Admiral/Red-spotted P	<i>Limenitis arthemis arthemis</i>	Res;U	deciduous woods	wild black cherry
April-May	X	White -m hairstreak	<i>Parrhasius m-album</i>	Res;R	open woods	Linden, oaks
April-Aug		Zebra Swallowtail	<i>Eurytides marcellus marcellus</i>	Res;U	open woods	pawpaw
Res R= resident; rare						
Res U= resident; uncommon						
ResC=resident; common						
Res I=resident; regular immigrant						
ImmR=immigrant;rare						
ImmU=immigrant;uncommon						
ImmC=immigrant;common						
nRes=naturalized resident						